

Tate & Lyle vs M.V. Leon I et al.

The Leon I crane accident on July 29th, 2000

**Buren, The Netherlands
July 2004
Schoonmade Consultancy
W.Schoonmade**

4. Probable cause of accident

Opinion B.

Breaking of the luffing wire of Leon I number 4 crane occurred due to an overload during operating conditions that were far beyond its design conditions. Most probably a shock load was the final cause of its failure.

Basis

1. The luffing wire was in good condition. See Basis 7.2. Moreover the break was a tensile break.

2. The limit switch for "high boom" was bypassed, the boom was luffed up in a very high position. The basket was touching the aft hatch coaming as stated by Mr. Balita to USCG as well as by stevedores. The boom then hit the boom stops with some speed. The consequent shock load caused the wire to break. The damages to the boom in the boom stop contact area, as also witnessed by Mr Terziev support this.

If the wire rope was not broken at this stage, the next has happened:
Due to the combined hoist/boom wire reeving a shock load on the luffing wire was originated when the lower hoist block was kept fixed. When then either hoisting, booming or slewing was done the luffing wire was stressed. Hoist and boom motor brakes would start to slip. Stevedores Becker and Lewis heard sounds "like a brake". When the lower block was released the boom jumped up and the boom wires jumped out of the sheave grooves and then fell back, causing a shock load. This would be aggravated by local damage when the wire did not land straight into its groove but instead on the sheave rim.
This failure mode is consistent with the physical evidence seen during the inspection as per 7.2. when it was found that the rope was broken when bent over a small radius.

3. During the inspection as per Basis 8.2. rope lengths were measured. From the measurements it was concluded, that apart from the test piece, virtually the original total length was present. It was confirmed that the location of the break corresponds with a position on top of the sheave when the boom is in the "two-blocks" position.
This is significant because it also confirms the failure mode as described above.

4. When the Leon I was visited in February 2004 all lower blocks showed signs of multiple hard contacts with other objects or hatch coamings.
Even damages between the wires were present. This very clearly that improper operations were conducted with the cranes, where foreign objects damaged the blocks but where a clear and very larger danger existed of (possibly) damaging the hoisting wire rope..

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6. CV and addendum

See pages 9, 10 and 11.

7. Testimonies and publications

1. Testimonies

In the litigation Texaco Petroleum and Production, Inc and Marathon Oil Company vs Amclyde Engineered Products et al the undersigned was deposed as crane expert for Lloyd's Register of Shipping in New Orleans on August 21, 2001.

2. Publications

No publications -other than company brochures- on subjects related to this case were written by the undersigned in the last ten years.

8. Documents reviewed

See page 12.

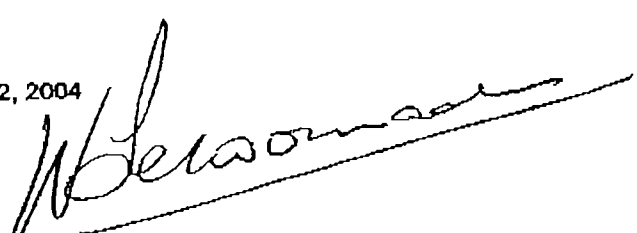
9. Remuneration

The remuneration the undersigned is receiving for the work relating to this subject amounts to:

- € 150,- per hour for reporting
- € 2000,- per day for days spent outside The Netherlands

Date:

July 12, 2004


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